JOINT INTEROPERABILITY & ENGINEERING ORGANIZATION

CENTER FOR SOFTWARE

Management Plan MP

15 April 1995

SOFTWARE MAINTENANCE MANUAL (SMM)

FOR THE

AIRFIELDS SYSTEM

Version 2.0
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This document was prepared for the Defense Information Systems Agency (DISA), Joint Interoperability and Engineering Organization (JIEO), Center for Software (JEX), Software Development Department (JEXA), General Applications Division (JEXAG).

This Software Maintenance Manual (SMM) contains all the information necessary for the applications programmer to maintain the software that makes up the Airfields system.

Any questions, comments, or considerations relative to this Software Maintenance Manual should be directed to the following:

Global Command and Control System (GCCS) Hotline
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DIAGRAMS

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SECTION 1. GENERAL

1.1 Purpose of the Software Maintenance Manual . The purpose of this Software Maintenance Manual (SMM) is to provide the *maintenance programmer with the background and instructions necessary to install, release, modify, and maintain the Airfields System. This guide also provides a summary of the file structures and methodology used in the preparation of the system for release.

1.2 Project References .

a. Department of Defense, Military Standard Software Development and Documentation , DOD-STD-7935A, 31 October 1988

b. Joint Interoperability and Engineering Office (JIEO), Washington, DC, Airfields Software Requirements Specifications (SRS) (Draft), 20 January 1995

c. Joint Interoperability and Engineering Office (JIEO), Washington, DC, Airfields Software Development Plan (SDP) (Draft), 20 January 1995

d. Joint Interoperability and Engineering Office (JIEO), Washington, DC, Airfields Software User Manual (SUM) (Draft), 28 February 1995

e. Joint Interoperability and Engineering Office (JIEO), Washington, DC, Airfields Software Center Operator Manual (SCOM) (Draft), 28 February 1995

f. Joint Interoperability and Engineering Office (JIEO), Washington, DC Airfields Software Version Description (SVD) (Draft), 15 April 1995

g. Microsoft's ODBC 2.0 Programmer's Reference and SDK Guide for Microsoft Windows and Windows NT

h. Defense Mapping Agency Aerospace Center (DMAAC) Mapping and Charting Department Air Facilities System Input Instructions for the Automated Air Facilities Information File (AAFIF) (U), Draft , dated 1 May 1991

i. DMAAC Automated Air Facilities Information File (AAFIF) to ADM Cross-Reference Map , dated 15 December 1994

j. Defense Mapping Products Specifications for the AAFIF,

First Edition (Draft) , dated October 1987

k. Defense Mapping Products Specifications for the AAFIF, Second Edition (Draft) , dated June 1996

l. Department of Defense/DISA/DSSO/JNSL Airfields User Instructions, Version 2.0 , dated 12 May 1990

m. International Organization for Standardization, International Electrotechnical Committee, Information Technology Programming Languages Their Environments and System Software Interfaces, Ada 9X Quality and Style Guidelines for Professional Programmers (Draft Baseline Version) , SPC-94093-CMC, Version 00.01.00, dated February 1995

n. International Organization for Standardization, International Electrotechnical Committee, Information Technology Programming Languages Their Environments and System Software Interfaces, Ada 9X Reference Manual (Draft) , Version 5.0, dated 1 June 1994

o. International Organization for Standardization, International Electrotechnical Committee, Information Technology Programming Languages Their Environments and System Software Interfaces, Ada 9X Rationale (Draft), Version 5.0, dated 8 June 1994

1.3 Terms and Abbreviations .

AAFIFID	Automated Air Facilities Information File Identification Number
CFSW	Center for Software
COBOL	Common Business Oriented Language
COE	Common Operating Environment
DBDD	Database Design Document
DBMS	Data Base Management System
DDA	Designated Development Agency
DIA	Defense Intelligence Agency
DID	Data Item Description
DISA	Defense Information Systems Agency
DMA	Defense Mapping Agency
DMAAC	Defense Mapping Agency Aerospace Center
DoD	Department of Defense
FAA	Federal Aviation Aeronautics
GCCS	Global Command and Control Systems
GUI	Graphical User Interface

ISP	Indexed Sequential Processing
JDSSC	Joint Data Systems Support Center
JIEO	Joint Interoperability & Engineering Organization
NOFORN	No Foreign [dissemination]
ODBC	Open Database Connectivity
OPR	Office of Primary Responsibility
OS	Operating System
RDBMS	Relational Database Management System
SCOM	Software Center Operator Manual
SDP	Software Development Plan
SMM	Software Maintenance Manual
SNF	Secret/No Foreign [dissemination]
SRS	Software Requirements Specification
STD	Standard
SUM	Software Users Manual
SVD	Software Version Description
WWMCCS	Worldwide Military Command and Control Systems

SECTION 2. SYSTEM DESCRIPTION

2.1 System Application . The Airfields system provides the Worldwide Military Command and Control System (WWMCCS) community with a wide range of data about free world airfields. All data is supplied by the Defense Mapping Agency Aerospace Center (DMAAC) and is updated monthly. The Airfields Retrieval system has been identified as a Global Command and Control Migration System and was re-engineered from COBOL to the Ada 95 language. It provides the capability to print the One-Line, Summary, Detail, Selective Data Retrieval, and Turnaround reports both on- and off-line.

The functional proponent for Airfields is the Joint Staff Logistics Directorate (J4). The office of primary responsibility (OPR) is the Operations Planning Division. The designated development Agency (DDA) is the Center for Software (JEX), Software Development Department (JEXA), General Applications Division (JEXAG).

The Airfields System has been in existence for approximately twenty years. In the mid to late 1980's, the Defense Mapping Agency Aerospace Center (DMAAC) changed the database format which resulted in the need to do a total redesign of the WWMCCS version of the system from COBOL 68 to COBOL 74. During that period, the access method also changed from Honeywell Indexed Sequential Processing (ISP) files to a flat file format.

Historically, WWMCCS users access the system approximately 100 times per month. The database is owned by the Defense Mapping Agency Aerospace Center (DMAAC) and contains data on approximately 44,000 airfields and consists of over one million records.

The Airfields database is a flat file database that is currently resident on the Worldwide Military Command and Control Systems (WWMCCS) Honeywell mainframe. Reverse engineering was used to re-host the database using the Relational Database Management System (RDBMS) in the Oracle Standard Query Language (SQL). The database and the application itself are linked via Open Database Connectivity (ODBC). The system runs under a Sun Solaris 2.3 environment. A commercial-off-the-shelf (COTS) Graphical User Interface, Screen Machine, is utilized at the front end.

The system complies with GCCS Integration Standards and employs many standards such as the windowing capability and an extensive Help facility to aid the user with system operation. The primary operational sites include the Worldwide Military Command and

Control System (WWMCCS) community and the Joint Staff.

2.2 System Organization . The Airfields system is accessible by way of the GCCS Main Panel in the GCCS' Common Operating Environment. From the GCCS Main Panel, select "Airfields." After selecting "Airfields", control is passed to the Airfields Main Panel which is driven by a Graphical User Interface, Screen Machine. The Airfields Main Panel allows the user three options.

FILE — Allows the user to Print or Exit

REPORT — Allows the user to execute one of the following reports:

a. Airfields One-Line Summary Report
b. Airfields Summary Report
c. Airfields Detail Report
d. Airfields Turnaround Calculation
e. Airfields Selective Data Report

HELP — Allows for display of Software User Manual.

The user has the capability to exit back to the Airfields Main Panel at any point in the system.

An architectural overview of the system can be found at Figure 2-1, Airfields Architectural Overview. A representation of the main components of the system from the GCCS Main Panel down, can be found in Figure 2-2, Airfields System Organization.

2.3 Security . The Airfields database is classified Secret/No Foreign Dissemination (SNF). Classification of data elements range from unclassified to Secret/No Foreign Dissemination. Reports are marked with the highest classification of the data actually reported. Reports containing CONUS only data are classified Unclassified. Programmers and testers are advised to control classified reports properly.

Figure 2-1 (Airfields Architectural Overview)

Part 1 of 2

goes here

Location of file: C:\DOCUMENT\SYSORG01.PRE

Figure 2-1 (Airfields Architectural Overview)

Part 2 of 2

goes here

Location of file: C:\DOCUMENT\SYSORG02.PRE

Figure 2-2 (Airfields System Organization)

goes here

Location of file: C:\DOCUMENT\AFSYSORG.PRE

SECTION 3. ENVIRONMENT

3.1 Equipment Environment . The Airfields System has been re-engineered/re-hosted to run under the Unix environment under Sun Solaris 2.3. Database manipulations are handled under the Oracle Standard Query Language (SQL) and Sequel Loader, an Oracle utility, has been used to load the migrate tables. An Open Database Connectivity (ODBC) package is utilized to link the application to the database. Screen Machine, a Graphical User Interface (GUI), is used at the front end of the system. This tool is an NT/Motif compliant GUI development tool which is compatible with the Ada 95 Language and Ada 95 compilers.

3.2 Support Software . The following are software files, COTS, data tables/files, etc. which must be installed in order for the software to operate:

Oracle/SQL Version 7	-	Unclassified
Pro*Ada	-	Unclassified
Ada Run-Time	-	Unclassified
GNAT Compiler (Ada 95) Version 2.05	-	Unclassified
Screen Machine (GUI)	-	Unclassified
Open Database Connectivity from OIS Version 2.0	-	Unclassified
Solaris 2.3	-	Unclassified
Airfields Source Files	-	Unclassified
Airfields Database Tables	-	Secret/NOFORN

3.3 Database . The following paragraphs describe the Airfields database and data tables.

3.3.1 General Characteristics . A minimum configuration to load the database includes one SunSparc 1000 or 2000 computer with approximately 500 megabytes of memory/auxiliary storage available. Other software which must be present includes the Solaris 2.3 operating system, an Oracle Relational Database Management System (RDBMS), all data files mentioned in Section 3.3.1.1, and the Sequel Loader utility to load the migrate tables.

3.3.1.1 Database Tables . Appendix A contains a list of tables that make up the airfields database. Each element within the table is described by AAFIFID, Element Name, Data Type, and Element size. Airport table is the parent table to all U.S. airfields and Oconus_Airport is the table that contains all information available on foreign airfields. Appendix B contains a list of database primary keys.

3.4 Application Files . Appendix C contains a list of package bodies and specifications followed by an explanation of what each does. The uppercase element name with the dot extension represents the external file name while the name followed by "--" represents the internal package body or package specification name.

SECTION 4. MAINTENANCE PROCEDURES

4.1 Conventions. This section describes any conventions used by the software such as the use of colors in displays, the use of audible alarms, the use of abbreviated vocabulary, and/or the use of rules for assigning names or codes.

4.1.1 Screen Color Conventions. The following are color conventions used within the system:

Overall Screen Color	White on blue
LOCATE Button	White on red
OK Button	Black on white
ADD Button	Black on green
REMOVE Button	White on red
CANCEL Button	White on red
HELP Button	Black on yellow
Highlighted text	Reverse video/blue on white
Toggle ON Switch	Red [Square]
Function: Select one, all, or any combination	
Toggle OFF Switch	Blue Square
Toggle ON	Red [Diamond] (Multiple Choice)
	Grey on blue; inactive/User has no control
	White on Blue; active

4.1.2 Abbreviated Vocabulary. This paragraph describes the abbreviated vocabulary used on selection screens:

Min	=	Minimum (when used for lengths, widths, and Load class(es)
Ft	=	Foot/Feet
Max	=	Maximum
Deg	=	Degree(s)
Min	=	Minutes (when used to specify Latitude and/or Longitude
Sec	=	Second(s)

4.2 Verification Procedures. For verification, use test cases outlined in the Software Test Report.

4.3 Error Conditions . See Appendix D for a list of all system messages (diagnostic and informational) that can occur while accomplishing any of the user's functions. The meaning of the message and the action that should be taken following receipt of it have been identified and described.

4.4 Maintenance Software . This section contains information needed to aid the applications programmer in maintaining the system software and database.

4.4.1 Source Files . A list of Airfields package bodies and package specifications can be found in Appendix C of this document. This list indicates the internal package body and package specification name and the external file name. The external file name is distinguishable by the dot notation. An explanation of what the package does is also provided. Re-use code was utilized that was obtained from the Defense Software Repository System (DSRS). When re-use code was utilized, notation of such was identified in the Comment area of the source code where it was used. Appendix H contains the Airfield Search Algorithm.

4.4.2 Database Tables . Appendix A contains a description of the Airfields database tables. A detailed design of the database including the Logical and Physical Data Models can be found in the draft Airfields Database Design Description (DBDD) document dated 1 May 1995. The GCCS database administrator will be responsible for monthly updates the database based on the information provided by the Defense Mapping Agency Aerospace Center (DMAAC). Overall data integrity will be maintained by DMAAC through monthly updates to the Automated Air Facilities Information File (AAFIF).

4.5 Maintenance Procedures . The following information will aid the applications programmer in the step-by-step process of modifying the Airfields Source Files.

4.5.1 Establishing a Maintenance Environment . Create an environment making it identical to the GCCS environment. The GCCS environment includes the following:

Oracle Version 7.1

Open Database Connectivity (ODBC) 2.0

Solaris 2.3

GNAT Compiler (Ada 95)

4.5.2 Modifying Source Files/Scripts . To modify a source file or script, locate the file that contains all the source files or scripts. Double click on the file that needs to be changed. Make necessary changes and save the file. Changing one source file may, at times, make it necessary to recompile other programs/scripts. Make sure that all necessary files and/or scripts have been recompiled as necessary.

4.5.3 Utilizing the GNAT Compiler . The location of the GNAT compiler is http://sw-eng.fall-church.va.us. The compiler can also be located at ftp://prep.ai.mit.edu/pub/gnu. README files are also located on the system. After downloading and uncompressing GNAT 2.0X, everything is initially placed in a directory called gnat-2.0x-sparc-sun-solaris2.3-bin (this is the Sun Solaris version). In that directory are files called README, gnatinfo.txt and features. All of these files contain useful information and should be read prior to using the GNAT compiler. If problems in locating GNAT-related documentation are encountered, a search of the internet should prove helpful. Questions concerning GNAT can be posted to the usernet newsgroup comp.lang.ada.

4.5.4 Using ODBC . The Open Database Connectivity interface allows the Airfields application to access data that is stored in the Airfields Relational Database Management System (RDBMS) using Structured Query Language (SQL) as the standard for accessing the data. OBDC was used as a binding between the Airfields application and the Airfields Oracle database because there are currently no Ada 95 bindings available for use. For additional information regarding ODBC, refer to Mircosoft's ODBC version 2.0, Programmer's Reference and SDK Guide for copyright years 1992, 1993, and 1994 by Microsoft Corporation. Additional information can also be found in a Readme file located under /h/Airfields/license. On "Danny" (the development computer), the Readme file for ODBC can be found under the following directory structure:

user1/airfields/lpatton/segmentation/Airfields/license

4.5.5 Developing Segmentation . For step-by-step instructions on developing segmentation, refer to Section 4 of Department of Defense (DoD), Defense Information Systems Agency's (DISA's) Global Command and Control (GCCS) Integration Standard Manual, Version 1.0, dated 26 October 1994.

For detailed instructions on GCCS tools required for GCCS segmentation install and deinstall procedures, refer to the following GCCS documentation:

a. GCCS Implementation Procedures for AIC
GCCS Version 2.1, Route 0, Final
Dated 27 September 1995
CM Number LL-500-103-18

b. GCCS System Administration Manual
Route 0, Final
Dated 29 September 1995
CM Number LL-500-29-10

4.5.6 Special Notes of Consideration/Lessons Learned . The following are special notes of consideration and lessons that were learned in the re-engineering of this product to the Ada 95 programming language:

a. Tools currently exist which implement and support Ada 95.

b. Ada 83 tools can still be used in an Ada 95 programming environment. Be prepared to recompile support code under Ada 95 compiler.

c. Ada 95 allows the designer to be much more effective in developing system solutions. Object-oriented features contributed much to the design process.

d. The time is right to convert to Ada 95 for management information systems requiring a graphical user interface and an open database connectivity compliant relational database management system, however more study should be done before making the decision for systems in other domains.

e. Ada 83 programmers can use Ada 95, however, incremental training should be provided to introduce the effective use of the new Ada 95 features.

f. Object-oriented software development courses should be provided even if the staff is familiar with the object-based paradigm of Ada 83.

g. Converting to Ada 95 does not mean throwing away old code. Ada 95 has many features designed to allow integration with numerous languages and is upwardly compatible.

h. Always use a pilot project when developing the first system within the domain. This will ensure that all of

the tools that a normal project will need will have been tried out and validated.

i. Push vendors toward Ada 95 support. Ada 95 is an internationally standardized object-oriented programming language and tools and compilers are rapidly becoming available.

4.5.7 Maintaining the Database Tables . (See Section 4.4.2 - Database Tables (above)).

4.5.8 Database Load Procedures . Airfields data is owned by the Defense Mapping Agency Aerospace Center (DMAAC). There are approximately 44,000 airfields in the database which consists of over one million records. DMAAC has provided the Defense Information Systems Agency (DISA) with an initial load tape that contains all 44,000 airfields, all the data necessary to populate the Global Command and Control System (GCCS) Airfields database. Updates to the database will also be provided by DMAAC. DISA will be responsible for updating the GCCS Airfields database. Appendix F of this document explains how the loading of the database is accomplished. Immediately below this paragraph are standards used throughout the Database Load Procedures in Appendix F:

STANDARD	EXPLANATION
Bold	Computer supplied instructions, responses, prompts.
Italicized	Exact key strokes, file name, table name
Bracketed information [ ]	User must supply the directory structure
Bracketed & Italicized [*ab*]	important notes, explanation to user about db load.
Information enclosed in < >	Identifies a specific keystroke on the keyboard

4.5.9 System Metrics. System metrics are outlined below. Additional and more detailed metrics may be found in Appendix E of this document.

a. Source Lines of Code

(1) Lines 49,317
(2) Statements 15,251
(3) Comments 4,756
(4) Blank Lines 9,530
(5) NCNB 35,031

b. Ada 95 Features Used
(1) Tagged Types
(2) Child Libraries
(3) Ada.Strings.Unbounded
(4) Interfaces.C

c. Other Metrics Used
(1) Percentage of reused code
-- Without modification 19.8%
-- With modification 2.3%

APPENDIX B

DATABASE PRIMARY KEYS

TABLE AIRPORT
(PRIMARY KEY WRLD_AREA_CD, INS_NUM_ID)

TABLE OCONUS_AIRPORT
(PRIMARY KEY WRLD_AREA_CD, INS_NUM_ID)

TABLE AFCT_BUNKER
(PRIMARY KEY (OCCURRENCE, WRLD_AREA_CD, INS_NUM_ID)

TABLE APRON
(PRIMARY KEY (OCCURRENCE, WRLD_AREA_CD, INS_NUM_ID)

CREATE TABLE AP_SCTY_CLSN
(PRIMARY KEY (AAFIF_CD, WRLD_AREA_CD, INS_NUM_ID)

TABLE ARREST_SYS
(PRIMARY KEY (OCCURRENCE, WRLD_AREA_CD, INS_NUM_ID)

TABLE COUNTRY
PRIMARY KEY (CY_CD)

TABLE DEFUELING
(PRIMARY KEY (OCCURRENCE, WRLD_AREA_CD, INS_NUM_ID)

TABLE FUEL_DISPENSING
(PRIMARY KEY (OCCURRENCE, WRLD_AREA_CD, INS_NUM_ID)

TABLE FUEL_STOCK
(PRIMARY KEY (OCCURRENCE, WRLD_AREA_CD, INS_NUM_ID)

TABLE FUEL_STORAGE
(PRIMARY KEY (OCCURRENCE, WRLD_AREA_CD, INS_NUM_ID)

TABLE HANGARS
(PRIMARY KEY (OCCURRENCE, WRLD_AREA_CD, INS_NUM_ID)

TABLE HARDSTAND
(PRIMARY KEY (OCCURRENCE, WRLD_AREA_CD, INS_NUM_ID)

TABLE MIGRATE
(PRIMARY KEY (SEQUENCE_ID)

TABLE OBF_STORAGE
(PRIMARY KEY (OCCURRENCE, WRLD_AREA_CD, INS_NUM_ID)

TABLE OCONUS_RUNWAY
(PRIMARY KEY (OCCURRENCE, WRLD_AREA_CD, INS_NUM_ID)

TABLE OCONUS_TAXIWAY
(PRIMARY KEY (OCCURRENCE, WRLD_AREA_CD, INS_NUM_ID)

TABLE REFUELING
(PRIMARY KEY (OCCURRENCE, WRLD_AREA_CD, INS_NUM_ID)

TABLE REVETMENTS
(PRIMARY KEY (OCCURRENCE, WRLD_AREA_CD, INS_NUM_ID)

TABLE RUNWAY
(PRIMARY KEY (OCCURRENCE, WRLD_AREA_CD, INS_NUM_ID)

TABLE SHED
(PRIMARY KEY (OCCURRENCE, WRLD_AREA_CD, INS_NUM_ID)

TABLE TAXIWAY
(PRIMARY KEY (OCCURRENCE, WRLD_AREA_CD, INS_NUM_ID)

TABLE WAREHOUSE
(PRIMARY KEY (OCCURRENCE, WRLD_AREA_CD, INS_NUM_ID)

TABLE WEATHER
(PRIMARY KEY (OCCURRENCE, WRLD_AREA_CD, INS_NUM_ID)

APPENDIX C

APPLICATION FILES

airfields_object_factory_class-about_panel.adb

airfields_object_factory_class-help_panel.adb

airfields_object_factory_class-main_panel.adb

airfields_object_factory_class-selection_criteria_panel.adb

airfields_object_factory_class-selective_panel.adb

airfields_object_factory_class-turnaround_panel.adb

airfields_object_factory_class.adb -- This package body contains the field name to field number mapping constant definitions and the functions that create and return the user interface panel data structures. This is a Screen Machine artifact.

airfields_object_factory_class.ads -- This package specification contains the field name to field number mapping constant definitions and the functions that create and return the user interface panel data structures. This is a Screen Machine artifact.

check_file.adb

dm_airport-bind_all.adb

dm_airport-convert_to_datavalue.adb

dm_airport-create_coordinate_where.adb

dm_airport-create_sql_statement.adb

dm_airport-dm_acft_bunkers-bind_acft_bunkers.adb

dm_airport-dm_acft_bunkers-convert_to_acft_bunkers.adb

dm_airport-dm_acft_bunkers-create_acft_bunkers_sql_statement.adb

dm_airport-dm_acft_bunkers.adb

dm_airport-dm_acft_bunkers.ads

dm_airport-dm_apron-bind_apron.adb

dm_airport-dm_apron-convert_to_apron_data.adb

dm_airport-dm_apron-create_apron_sql_statement.adb

dm_airport-dm_apron.adb

dm_airport-dm_apron.ads

dm_airport-dm_arrest_sys-bind_arrest_sys.adb

dm_airport-dm_arrest_sys-convert_to_arrest_sys_data.adb

dm_airport-dm_arrest_sys.adb

dm_airport-dm_arrest_sys.ads

dm_airport-dm_country_cd.adb -- DM_Airport_DM_Country_Cd -- This package body searches the Airfields Database for the country code when provided the country name.

dm_airport-dm_country_cd.ads

dm_airport-dm_defueling.adb

*dm_airport-dm_*defueling.*ads*

dm_airport-dm_fuel_dispensing-bind_fuel_dispensing.adb

dm_airport-dm_fuel_dispensing-convert_to_fuel_dispensing_data.adb

dm_airport-dm_fuel_dispensing-create_fuel_dispensing_sql_statement.adb

dm_airport-dm_fuel_dispensing.adb

*dm_airport-dm_*fuel_dispensing.*ads*

dm_airport-dm_fuel_stock-bind_fuel_stock.adb

dm_airport-dm_fuel_stock-convert_to_fuel_stock_data.adb

dm_airport-dm_fuel_stock-create_fuel_stock_sql_statement.adb

dm_airport-dm_fuel_stock.adb

dm_airport-dm_fuel_stock.ads

dm_airport-dm_fuel_storage-bind_fuel_storage.adb

dm_airport-dm_fuel_storage-convert_to_fuel_storage_data.adb

dm_airport-dm_fuel_storage-create_fuel_storage_sql_statement.adb

dm_airport-dm_fuel_storage.adb

dm_airport-dm_fuel_storage.ads

dm_airport-dm_hardstand-bind_hardstand.adb

dm_airport-dm_hardstand-convert_to_hardstand_data.adb

dm_airport-dm_hardstand-create_hardstand_sql_statement.adb

dm_airport-dm_hardstand.adb

dm_airport-dm_hardstand.ads

dm_airport-dm_revetments-create_revetments_sql_statement.adb

dm_airport-dm_revetments.adb

dm_airport-dm_revetments.ads

dm_airport-dm_runway-bind_runway.adb

dm_airport-dm_runway-convert_to_runway_data.adb

dm_airport-dm_runway-create_runway_sql_statement.adb

dm_airport-dm_runway.adb -- This package body provides an SQL search of the Airfields database based on user request.

dm_airport-dm_runway.ads -- This package specification controls the access to the primary runway record.

dm_airport-dm_taxiway.adb -- This package body provides an SQL search of the Airfields database based on user request.

dm_airport-dm_taxiway.ads

dm_airport-dm_warehouse-bind_dm_warehouse.adb

dm_airport-dm_warehouse-convert_to_warehouse_data.adb

dm_airport-dm_warehouse-create_warehouse_sql_statement.adb

dm_airport-dm_warehouse.adb

dm_airport-dm_warehouse.ads

dm_airport-dm_weather.adb

dm_airport-dm_weather.ads

dm_airport-get_security_information.adb

dm_airport-split_be.adb

dm_airport.adb

dm_airport.ads

dm_turnaround.adb

dm_turnaround.ads

full_spelling.ads

get_turnaround_screen_support_info.adb

insert5_zeros.adb

insert_zeros.adb

latin_1.ads

main_panel_dialog_class-background.adb

main_panel_dialog_class-background.ads

main_panel_dialog_class-interact.adb

main_panel_dialog_class.adb

main_panel_dialog_class.ads -- This package specification is a Screen Machine generated dialog class for interacting with the user via the 'Main_Panel' panel.

make_be.adb

moretypes.ads

multi_page_report-clear.adb

multi_page_report-to_string.adb

multi_page_report.adb

multi_page_report.ads

odbc-ext.adb

odbc-ext.ads

odbc.adb

odbc_utilities.adb

odbc_utilities.ads

one_line_report-with_coord_radius.adb

one_line_report-with_coord_radius.ads

one_line_report.adb

one_line_report.ads

one_page_report.adb

print_string.adb

report_printer.adb

report_printer.ads

screen_machine_housekeeper_package.adb

screen_machine_housekeeper_package.ads

selection_criteria.adb -- This package body sets up the selection criteria screen and receives user input from the screen.

selection_criteria.ads -- This package specification sets up the selection criteria screen and receives user input from the screen.

selection_criteria_airfield_name.adb-- This package body sets up the display for the fields on the selection criteria screen for Airfield_Names and receives and validates user input.

selection_criteria_airfield_name.ads -- This package specification sets up the display for the fields on the selection criteria screen for Airfield_Names and receives and validates user input.

selection_criteria_basic_encyclopedia.adb -- This package body sets up the display for fields on the selection criteria screen for basic encyclopedia number and receives and validates user input.

selection_criteria_basic_encyclopedia.ads-- This package specification sets up the display for fields on the selection criteria screen for basic encyclopedia number and receives and validates user input.

selection_criteria_coordinate_radius-arccos_check.adb

selection_criteria_coordinate_radius- calculate_distance_between_in_degrees.adb

selection_criteria_coordinate_radius- convert_back_to_latitude_type.adb

selection_criteria_coordinate_radius- convert_back_to_longitude_type.adb

selection_criteria_coordinate_radius-convert_distance_to_degrees.adb

selection_criteria_coordinate_radius- convert_lat_to_distance_type.adb

selection_criteria_coordinate_radius- convert_lat_to_float_type.adb

selection_criteria_coordinate_radius- convert_lon_to_distance_type.adb

selection_criteria_coordinate_radius- convert_lon_to_float_type.adb

selection_criteria_coordinate_radius-determine_distance.adb

selection_criteria_coordinate_radius-determine_lat_longs.adb

selection_criteria_coordinate_radius- new_geographic_location.adb

selection_criteria_coordinate_radius.adb

selection_criteria_coordinate_radius.ads

selection_criteria_country_code.adb-- This package specification sets up the display for fields on the selection criteria screen for Country_Codes and receives and validates user input.

selection_criteria_country_code.ads

selection_criteria_geoloc.adb -- This package body sets up the display for fields on the selection criteria screen for geolocs and receives and validates the Geoloc input/selected by the user.

selection_criteria_geoloc.ads-- This package body sets up the display for fields on the selection criteria screen for geolocs and receives and validates the Geoloc input/selected by the user.

selection_criteria_icao.adb-- This package body sets up the display for fields on the selection criteria screen for ICAO codes.

selection_criteria_icao.ads-- This package specification sets up the display for fields on the selection criteria screen for ICAO codes.

selection_criteria_panel_dialog_class-extras-background.adb -- This package body implements the background processing for the 'Selection_Criteria_Panel' panel.

selection_criteria_panel_dialog_class-extras-background.ads -- This package specification implements the background processing for the 'Selection_Criteria_Panel' panel.

selection_criteria_panel_dialog_class-extras.adb

selection_criteria_panel_dialog_class-extras.ads

selection_criteria_panel_dialog_class-interact.adb -- This package body implements the interactive dialog logic for the 'Selection Criteria_Panel' and is an artifact of Screen Machine.

selection_criteria_panel_dialog_class.adb-- This package body is a Screen Machine generated dialog class for interacting with the user via the 'Selection_Criteria_Panel' panel.

selection_criteria_panel_dialog_class.ads-- This package specification is a Screen Machine generated dialog class for interacting with the user via the 'Selection_Criteria_Panel' panel.

selective_data_report.adb

selective_data_report.ads

selective_panel_dialog_class-interact.adb

selective_panel_dialog_class.adb

selective_panel_dialog_class.ads

smve.adb

storage_manager_sequential.adb-- This package body is GFE code from Wizard Software. This is the package body.

storage_manager_sequential.ads-- This package specification contains GFE code from Wizard Software.

string_sequential_unbounded_managed_iterator.adb-- This package body contains GFE code from Wizard Software.

string_sequential_unbounded_managed_iterator.ads-- This package specification contains GFE code from Wizard Software.

string.ads

strings_fixed.adb

strings_fixed.ads

strings_maps.adb

strings_maps.ads

strings_search.adb

strings_search.ads

strings_unbounded.adb

strings_unbounded.ads

testing_char.adb

turnaround_panel_dialog_class-interact.adb

turnaround_panel_dialog_class.adb

turnaround_panel_dialog_class.ads

turnaround_report.adb

turnaround_report.ads

turnaround_screen_support-simulation_support- aircraft_capacity.adb

turnaround_screen_support-simulation_support- aircraft_capacity.ads

turnaround_screen_support-simulation_support-load_class.adb

turnaround_screen_support-simulation_support-load_class.ads

turnaround_screen_support-simulation_support.adb

turnaround_screen_support-simulation_support.ads

turnaround_screen_support.adb

turnaround_screen_support.ads

AIRFIELD.ADB -- This package body is the main procedure of the Airfields system.

AIRFSTAT.ADB -- Airfield_Statuses -- This package body takes an array of boolean values corresponding to the various airfield status values requested by the user and converts them to a string of SQL values.

AIRFSTAT.ADS -- Airfield_Statuses -- This package specification takes an array of boolean values corresponding to the various airfield status values requested by the user and converts them to a string of SQL values.

AOFCHEPA.ADB -- Help_Panel -- This package body procedure creates a panel called 'Help_Panel.'

AOFCMAPA.ADB -- Main_Panel -- This package body procedure creates a panel called 'Main_Panel.'

AOFCSCPA.ADB -- Selection_Criteria_Panel -- This package body procedure creates a panel called 'Selection_Criteria_Panel.'

DM_AIR_D.A -- DM_AIRPORT_dcl -- ?

DMAIRPOR.ADS -- DM_Airport -- ?

DMCYCDDC.A -- DM_AIRPORT-dcl -- ?

HEPADICL.ADB -- Help_Panel_Dialog_Class -- This package body is a Screen Machine generated dialog class for interacting with the user via the 'Help_Panel' panel.

HEPADICL.ADS -- Help_Panel_Dialog_Class -- This package specification is a Screen Machine generated dialog class for interacting with the user via the 'Help_Panel' panel.

HPDICLIN.ADB -- Interact -- This package body implements the interactive dialog logic for the 'Help_Panel' panel.

LATIN_1.ADS -- Latin_1 -- This package specification is adapted from the Ada Reference Manual for use with GNAT and defines the character set that will be used in Airfields.

MAKE_BE.ADB -- Make_BE -- ? This is a package specification.

MAPADICL.ADB -- Main_Panel_Dialog_Class -- This package body is a Screen Machine generated dialog class for interacting with the user via the 'Main_Panel' panel.

MORETYPE.ADS -- Moretypes -- This package specification is used to define miscellaneous types.

MPDICLIN.ADB -- Interact -- This package body implements the interactive dialog logic for the 'Main_Panel' panel.

ONLINREP.ADB -- One_Line_Report -- This package body builds the type report selected by the user according to selection criteria.

ONLINREP.ADS -- One_Line_Report -- This package specification contains the subroutines to clear the report and fill it with data pulled form the database.

SECRCOCO.ADB -- Selection_Criteria_Country_Code -- This package body sets up the display for fields on the selection criteria screen for Country_Codes and receives and validates user input.

SECRCORA.ADB -- Coordinate_Radius -- ? This is the package body.

SECRCORA.ADS -- Coordinate_Radius -- ? This is the package specification.

STRUINBO.ADB -- Strings_Unbounded -- This package body contains a GFE GNAT runtime component.

STRUINBO.ADS -- Strings_Unbounded -- This package specification contains a GFE GNAT runtime component.

TAXIWAY_.A -- DM_AIRPORT_dcl -- ?

DM_AIRPORT.ADB -- This package body returns the Airport records based on user-entered selection criteria and is written in SQL.

DM_AIRCC.ADB -- This package body returns the country code records based on user-entered selection criteria and is written in SQL.

DM_AIRRW.ADB -- DM_AIRPORT.DM_RUNWAY.ADB -- This package body returns the RUNWAY records based on a user-entered selection criteria and is written in SQL.

DM_AIRTW.ADS -- DM_AIRPORT.DM_TAXIWAY.ADG -- This package specification returns the Taxiway records based on user- entered selection criteria and is written in the SQL Language.

DMJ_AIRPO.ADS -- This package specification defines all the procedure calls for retrieving all Airport records???

DM_AIRCY.ADS -- DM_AIRPORTS.DM_COUNTRY_CD.ADS -- ?

DM_TXIWY.ADS -- DM_AIRPORT.DM_TAXIWAY.ADS -- ?

DM_AIRRN.ADS -- DM_AIRPORTS.DM_RUNWAY.ADS -- ?

APPENDIX D

SYSTEM ERROR/INFORMATIONAL MESSAGES

1. ERROR IN FILE MENU SELECTION - CONTRACT PROGRAMMERS.

   Corrective Action: See Section 3.7 of this manual for contact information.

2. ERROR IN REPORT MENU SELECTION - CONTACT PROGRAMMERS
   Occurs when a user has selected a report that the system does not recognize.

   Corrective Action: See Section 3.7 for contact information.

3. ERROR IN MAIN MENU SELECTION - CONTACT PROGRAMMERS
   This message is spawned when an error in the Main Menu function has occurred.

   Corrective Action: See Section 3.7 for contact information.

4. ENTER A COUNTRY NAME TO LOCATE
   Occurs to when the user has clicked on the LOCATE button without having entered a country name as search criteria.

   Corrective Action: Enter a country name prior to selecting LOCATE.

5. COUNTRY MATCH NOT FOUND
   Occurs when a search is made for user-entered country name and the system was unable to locate the named country.

   Corrective Action: Check the spelling of the country entered and resubmit the request.

6. PLEASE ENTER A COUNTRY CODE OR SELECT FROM THE LIST
   Occurs when the user has elected to retrieve a report by country code.

   Corrective Action: This message is for informational purposes only. Enter the country code desired or select one from the list supplied by the system.

7. COUNTRY CODE DOES NOT EXIST
   Occurs when the user has entered an invalid country code for country code search criteria.

   Corrective Action: Check the spelling of the country code entered or select one from the list of codes supplied by the system.

8. BASIC ENCYCLOPEDIA NUMBER DOES NOT EXIST
   Occurs when the user has entered an invalid BE number as search criteria.

Corrective Action: Check the Basic Encyclopedia number entered and resubmit the request.

9. ICAO NUMBER DOES NOT EXIST
Occurs when the user has entered an invalid ICAO code as search criteria.

Corrective Action: Check the ICAO code entered and resubmit the request.

10. GEOLOC DOES NOT EXIST
Occurs when the user has entered an invalid GEOLOC as search criteria.

Corrective Action: Check the GEOLOC code entered and resubmit the request.

11. AIRFIELD NAME DOES NOT EXIST
Occurs when the user has entered an invalid Airfield name as search criteria.

Corrective Action: Check the spelling of the Airfield Name entered and resubmit the request.

12. NO MORE THAN 20 SELECTION CRITERIA MAY BE ENTERED
Occurs when the user has entered more than the maximum of twenty items for search criteria.

Corrective Action: Limit the selection criteria list to 20 or less and resubmit the request.

13. SELECTION LIST IS EMPTY
Occurs when the user has attempted to spawn a retrieval and no selection criteria was entered

Corrective Action: Enter the criteria required for the retrieval and resubmit the request.

14. FIRST PICK A SELECTION LIST ITEM TO BE REMOVED
Occurs when the user has attempted to remove an item from the selection list before selecting an item.

Corrective Action: Resubmit selection(s) from criteria screen.

15. INVALID DATA FOR THIS FIELD, PLEASE RE-ENTER
Occurs when the user has entered data that is not valid for the field it was entered into.

Corrective Action: Ensure data entered is valid data then resubmit the request.

16. ENTER AT LEAST ONE [*RETRIEVAL TYPE*]
Occurs when the user is not specified a retrieval type.

Corrective Action: Resubmit the request ensuring that at least one retrieval type has been selected.

17. PLEASE CHECK GEOLOC RANGE
Occurs when a constraint error has occurred when the user entered a range of GEOLOCs.

Corrective Action: Resubmit the request.

18. PLEASE CHECK MIN_RUNWAY_LENGTH RANGE
Occurs when a constraint error is encountered when a minimum runway length range is entered.

Corrective Action: Check values and try again.

19. PLEASE CHECK MAX_RUNWAY_LENGTH RANGE
Occurs when a constraint error is encountered when a maximum runway length range is entered.

Corrective Action: Check values and try again.

20. PLEASE CHECK MIN_RUNWAY_WIDTH RANGE
Occurs when a constraint error is encountered when a minimum runway width range is entered.

Corrective Action: Check values and try again.

21. PLEASE CHECK MAX_RUNWAY_WIDTH RANGE
Occurs when a constraint error is encountered when a maximum runway width range is entered.

Corrective Action: Check values and try again.

22. PLEASE CHECK MIN_LOAD_CLASS RANGE
Occurs when a constraint error is encountered when a minimum Load Class range is entered.

Corrective Action: Check values and try again.

23. PLEASE CHECK MAX_LOAD_CLASS RANGE
Occurs when a constraint error is encountered when a maximum Load Class range is entered.

Corrective Action: Check values and try again.

24. PLEASE CHECK MIN_TAXIWAY_WIDTH RANGE

Occurs when a constraint error is encountered when a minimum taxiway width range is entered.

Corrective Action: Check values and try again.

25. PLEASE CHECK MAX_TAXIWAY_WIDTH RANGE

Occurs when a constraint error is encountered when a maximum taxiway width range is entered.

Corrective Action: Check values and try again.